Institutions, Infrastructure and East African Community Membership of Burundi and Rwanda on Trade

Abstract
The East African Community (EAC) is in a quest to integrate further to form a currency union. However, empirical evidence has shown that policies initiated as a panacea have failed due to weak institutions. In this background, the study seeks to investigate the role of existing institutions on trade using an augmented gravity model of trade. The Poisson Pseudo Maximum Likelihood (PPML) was used due to its efficiency. Also, the study estimates the impact of infrastructure on trade in EAC. Additionally, the study estimates whether Burundi and Rwanda gained from joining EAC in 2009 or rather contributed significantly to trade in EAC. The study showed that institutions are not contributing significantly to trade. Additionally, the study showed that infrastructure had a positive impact on trade. The study also showed that Burundi and Rwanda benefited from joining the EAC by a combined 81%. The study concludes that there is a greater potential to trade therefore an exigency for a new institutional framework and reforms to facilitate trade by reducing trade and non-trade barriers.

Keywords: East African Community (EAC), Currency union, institutions, gravity model of trade, Poisson Pseudo Maximum Likelihood (PPML), infrastructure, trade barriers, non-trade barriers

Author: Abban Stanley
Email: stanicorn@yahoo.com

INTRODUCTION

Regional Corporation in the East African Community predated before the contractual formation of the community (Vidmar, 2015; Njenga, 2018). The treaty of June 1967 formalized the East Africa Community (EAC) as a customs union comprising Kenya, Uganda, and Tanganyika, present-day Tanzania (Hazlewood, 1979; Kasaija, 2003; Mclntyre, 2005). Under colonial rule, the East African currency board issued a single currency by practicing the Sterling Exchange rate regime until countries gained independence and separately established central banks due to limited discretion of monetary policy in 1967 (Masson & Pattillo, 2004). However, the EAC collapsed in 1977 due to alleged skewed benefits to Kenya attributed to relatively greater industrialization than the other members (Mngomezulu, 2013; Musonda et al, 1997). This led to the signed Permanent Tripartite Commission for East African Co-operation in November 1993 which was launched in 1996 and paved way for the treaty of 30th November 1999 to cement East African Community (EAC) as the official name and revived on 7 July 2000 (Mngomezulu, 2013; Vidmar, 2015; Njenga, 2018). To facilitate the firm implementation of objectives seven institutions were established. Articles 5, 8 and 13 of the treaty stipulated the objectives of the community with greater emphasizes laid on developing policies and programs to widen and deepen co-operation in diverse ways and laid the long term plan of the community in attaining a political union by harmonizing macroeconomic policies and removal of all barriers to trade (Mukandala, 2000:89).

The Protocol on the Establishment of the East African Community Customs union was signed on 2 March 2004 as a stepping stone towards achieving the long term perspective of a political union which was commenced on 1 January 2005. This led to the implementation of a Common External Tariff (CET), elimination of customs duty, scrapped off charges of equivalent effect on imports, and set the tone to eliminate all tariffs by 2010. The Customs Union aimed to liberalize intra-EAC trade and promote efficiency in production through facilitating the free movement of goods within the community. The Republic of Burundi and Rwanda acceded to the EAC treaty on 18th June 2007 and officially joined in 2009. To facilitate the establishment of a currency union by 2012 led to the set out nominal convergence criteria to reduce asymmetry of shocks among members. However, countries inability to attain the laid down criteria was attributed to infrastructural deficits and lack of macroeconomic restrain (Kasaija, 2006; Kishore & Ssozi, 2011). Given this, the EAC trade Negotiation Act was brought to bear in the year 2008 which was led by a Joint Trade Negotiations Commission. Also, the Common Market Protocol was signed in November 2, 2009 and implemented in July 1 2010, to facilitate the free movements of capital, goods, persons, and services (WTO, 2012; Njenga, 2018). The Customs Management Act of 2004 was amended and implemented in 2012.

The Protocol on East African Monetary Union was signed by Kenya, Uganda, Tanzania, Rwanda, and the Republic of Burundi in November 2013, igniting the desire to establish a currency union by 2024 (Umulisa & Habimana, 2018). It spilled out the processes including macroeconomic convergence criteria, legal and institutional framework for the establishment by 2024 of a single currency (Caporale et al, 2018). In this background, the pinpointed coverage on harmonization of policies include fiscal policy coordination and harmonization, monetary and exchange rate policy harmonization, statistic harmonization, banking supervision, and financial stability, harmonization of payments financial market coordination, and settlement systems, and cohesive accounting and financial standards. EAC also decided to establish the East African Monetary Institute and the East African Central Bank to fulfill these goals. Also, the Competition Act was implemented after its amendment in 2009 and the Trade Negotiation Bill was drafted in 2014. Also, the East African Payments System (EAPS) was launched to allow members to transact using all sovereign currencies in March 2014 even though the prevalence of some transaction costs. The Protocol on the Monetary Union was ratified by all five partner states in early 2015. As a result of the efforts, South Sudan filed to join the community in March 2016 and became a member in April 2016. The EAC Elimination of Non-Tariff Barriers Act was implemented in 2017. All members of EAC are eligible members of the World Trade Organization except for South Sudan. Additionally, the community has an international Free Trade Area (FTA) Agreements notably Europe and the United States. Also, the EAC is an eligible beneficiary of the African Continental Free Trade Area (AfCFTA) Agreement, touted as the World largest Free Trade Area, aimed to create a common market for goods, resources, and services to facilitate investment, healthy competitiveness and resolve overlapping memberships to promote socio-economic stability under Article 3 of the treaty outlined to begin on 1 July 2020.

Despite the rattling effort of EAC, the level of trade remained robust, below 23 % of total trade (UNCTAD database, 2018). The East African Community (EAC) is plagued with trade and non-trade barriers leading to the low level of trade in the community (AfDB, 2018). The non-trade barriers consist of smuggling, bribery and corruption, inadequate trade and transport infrastructure, illegal trade practices, political interferences and wrangling, fake documentations, political instability, human trafficking, high illiteracy among small-scale business operators who uses informal channels to export their goods due to the ignorance of the policy on free movement of goods, poor business services such as banking, auditing, and insurance, embezzlement of national coffers, security-related issues, wrong invoicing, human rights violation among others. (Alusala, 2010; Balisttreri et al., 2014; United Nations Office of Drugs and Crimes, 2016; East Africa Bribery Index, 2017 by Transparency International; Kaminchia, 2019, AfDB, 2019).

These non-trade barriers increase the cost of trading and culminate in the large informal sector. Other significant barriers to trade in EAC are nontariff, tariffs, import restrictions, and export restrictions utilizing bans and quotas (Okumu, 2010; Mkuna, 2014; World Bank, 2014; ODI, 2016, 2017, AfDB, 2019). Currency union has proven to be a panacea for these ills in other regions. As a result, the exigency for countries to integrate further to form a currency union in 2024 has been touted.

Rodrik (2009) showed that virtually every major development strategy of the past five decades has fallen short of becoming a panacea. Additionally, Easterly (2001) showed the failed policy-oriented panacea that has failed which includes conditional aid, debt forgiveness, foreign aid, education, family planning, big infrastructure projects, foreign investment, and so on. In his argument, none of these activities will have any impact on development unless countries meet the basic institutional requirements: rule of law, corruption-free government, and protection of property rights, efficient bureaucracy, and political constraint on the Executive. In this background, the current paradigm influencing recent reforms emphasizes the importance of improved institutions as one of the key factors enhancing trade hence economic growth. In this context, formal institutions have proven to reduce uncertainty which creates transaction costs, especially currency risk and insecurity of international exchange, thereby reduces the cost of doing business. In this context, institutions have proven to facilitate trade and ensure transparency (Peng, 2009; Iwanow, 2012; Beyer & Fening, 2012; Ogundipe et al., 2014; Krenz, 2016; Yushi & Bogoro, 2018; Álvarez et al, 2018). Additionally, Government-enforced trade barriers, such as tariffs and non-tariff barriers, also contribute to trade transaction costs (Baeten and den Butter, 2006). Hypothetically, Shirley (2005) showed that "societies with persistently higher transaction costs have less trade, fewer firms, less specialization, less investment, and lower productivity. Institutions determine whether transaction costs are low or high. As a result, institutions can help attenuate the adverse effect of trade and non-trade barriers. This has necessitated the need to investigate the impact of institutions on trade in EAC. Additionally, the study estimates the impact of infrastructure on trade in EAC. Finally, the study estimates the impact of Rwanda and Burundi membership on trade in EAC. There exist studies focusing on some aspects of institutions on the various trade-related activities (Welsh, 2007; Lilaya, 2011; Muluvi et al.,2012, Karau & Mburu 2014, Ufford & Zaal, 2014; Ghosh & Uddhammar, 2015; Sutton et al., 2015; Njeru, 2019 among others). However, there is no study on the aggregate impact of institutions on trade in the community. In this background, the aggregate effect will show the need for improvement in such institutions. The study estimates the role of institutions on trade for policy implication purposes due to limited studies.

LITERATURE REVIEW

2.1 Theory on Institutions

According to North (1990), 'Institutions are the formal and informal rules and norms that organize economic, political, and social relations'. Additionally, institutions are brought to life by people and organizations (North, 1990; Leftwich & Sen, 2010), it provides a relatively predictable structure for everyday social, economic and political life, and shape people's incentives and behaviours. According to Leftwich & Sen (2009; 2010), institutions shape but do not necessarily always determine behaviour. The traditional approach used to explain the effect of institutions on trade is underpinned in the transaction costs theory propounded by Roland Coase. In the study, Coase (1992) pointed out that the effects of high transaction costs are "pervasive in the economy" and that "if the costs of making an exchange are greater than the gains which that exchange would bring, that exchange would not take place. The theory postulates that institutions affect trade volumes through their impact on transaction costs. In this context, the authors showed that weak institutions raise international transaction costs and hamper international trade. They argue that "trade is reduced by hidden transaction costs associated with the insecurity of international exchange: contracts may not be enforceable across jurisdictional boundaries, bribes may be extorted by customs officials, and shipments may even be hijacked." On the other hand, the authors find that "trade expands dramatically when it is supported by strong institutions – specifically, by a legal system capable of enforcing commercial contracts and by transparent and impartial formulation and implementation of government economic policy" (Anderson & Marcouiller, 1999).

Development practitioners have tended to prioritize formal institutions, viewing informal ones as separate and often detrimental to development outcomes (Unsworth, 2010). Empirically, economic institutions shape the rights, regulatory framework, and degree of rent-seeking and corruption, inland, housing, labour and credit markets (Acemoglu & Robinson, 2012; Leftwich & Sen, 2010: 17; World Bank, 2013a: 8). Many cross-country statistical studies find that more inclusive economic institutions improve economic outcomes (Rodrik et al., 2004; Acemoglu & Johnson, 2005). Moreover, democratic political institutions tend to have growth-enhancing and growth-stabilizing effects, (Evans & Ferguson, 2013: 35, 51). Therefore, an exigency for institutions to ensure transparency and growth of the sub-region in line with the policy of a common currency. More recent theoretical and empirical research highlighted that institutions can also impact on trade via the production effect (Beck, 2002; Nunn, 2004; Claessens & Laeven, 2004; and Cuñat & Melitz, 2003). The production cost effect approach highlights the fact that institutions can alter production costs. This literature identifies how specific sub-components of the institutional environment, such as contract enforcement mechanisms, property rights, labour market regulations, and structure of the financial sector, affect countries' comparative advantage. The quality of institutions is central as it permits to overcome frictions that occur when two parties with different and often opposing interests enter into a productive relationship. Yet the literature has thus far not made a unified attempt at empirically testing the impact of institutions on comparative advantage patterns. The production cost effect approach highlights the fact that institutions can alter production costs. Another important notion highlighted by the literature on contract enforcement and its impact on trade is that firms might adapt their organizational structures to cope with imperfect enforcement of contracts (Antras & Helpman, 2008). In particular, firms often respond to poor contract enforcement by vertically integrating their production processes. According to Nunn (2007), countries with good contract enforcement specialize in the production (and export) of goods for which relationship-specific investments are most important. The author also found that differences in contract enforcement abilities of nations affect the global trade pattern to a greater extent than differences in physical and human capital. Furthermore, the institutional model adopted to enhance trade fails to capture key trade components in the sub-region which has a greater cost to the level and quality of trade due to peculiarity in problems facing the sub-region. Also, Williamson (1971, 1979) who pointed out that vertical integration can be a firm's response to the hold-up problem. Williamson emphasized that moving the production of specific inputs inside the firm's boundaries reduces dependence on contract enforcement for the final good. The key assumption is that the impact of contract enforcement regulations on the comparative advantage of complex goods is reduced when firms are better able to integrate vertically. Given that production processes vary between industries, different sectors will have different inherent capacities for vertical integration. This implies that the institutional environment can have an impact on organizational structure, which in turn affects the structure of economic exchanges, productivity, and other factors. Kaufmann & Wei (1999) tested the 'efficient grease' hypothesis which stipulates that firms may find bribes helpful to minimize the effective red tape it faces. However, they find that corruption does not improve exchanges, instead, if corruption is widespread, time spent with bureaucrats and the regulatory burden is high. Additionally, Winters (2004) highlighted that "the less restrictive is trade policy, the lower are the incentives for corruption while simpler more transparent and non-discretionary policies reduce the scope for corruption." Empirically, Ades & Di Tella (1999) argued that there is a correlation between economic rents resulting from trade restrictions, active industrial policy measures, and higher corruption rates. Corruption, as demonstrated by Mauro (1995), lowers investment and economic growth. Moreover, Wei (2000) examines another potential reason for the relationship between corruption and trade openness: "open countries face greater losses from corruption than less open ones because corruption impinges disproportionately on foreign transactions. As a result, they have greater incentives to develop better institutions." Wei (2000) supports this hypothesis through a cross-country panel analysis. The author shows that corruption is associated with what he terms "natural openness" (the share of trade that can be attributed to clear exogenous variables such as distance, population, and land area), but not with "residual openness." The latter term Wei defines as the difference between actual and natural openness which can be related to the economic policies implemented by a country.

Chor (2010) analyses different sub-components of institutional quality and develops a model that measures the effects of factor endowments, Ricardian productivity, and institutions. The results confirm the role of factor endowments and various types of institutions as a source of comparative advantage. Chor provides theoretical foundations to the notion that institutions might impact on trade by affecting countries' comparative advantage. Levchenko (2004), whose model of international trade examines differences in institutional quality based on an incomplete contract as the source of comparative advantage. In his study, the model indicates that poor countries with weak institutions may fail to benefit from trade, as trade pushes factor prices to diverge. Nunn (2007) also examines the effect of contracting institutions on trade but his initial assumptions somewhat differ from Levchenko. The author finds that countries with good contracting institutions tend to specialize in exports for which relation-specific investments are most important.

His estimates show that the quality of contract enforcement explains a larger share of global trade patterns than counties' factor endowments. Analysis by Costinot (2009) proposes a theoretical model seeking to explain how contract enforcement institutions affect comparative advantage. Under free trade, the country where teams are larger – in efficiency units of labour – specializes in the more complex goods. In our set-up, it is the country where the product of institutional quality and workers' human capital is larger. Hence, better institutions and higher levels of education are complementary sources of comparative advantage in the more complex industries. Government-enforced trade barriers, such as tariffs and non-tariff barriers, also contribute to trade transaction costs (Baeten & den Butter, 2006).

The argument of Shirley (2005) highlighted that, in environments where obtaining information on the forthcoming transaction is expensive and where private property is less than perfectly protected, contracts are more difficult to specify and enforce for all possible eventualities. As a result, transaction costs increase, with negative consequences for productive activity. Shirley (2005) notes that "societies with persistently higher transaction costs have less trade, fewer firms, less specialization, less investment, and lower productivity. Institutions determine whether transaction costs are low or high. Ranjan & Lee (2007) undertake an empirical analysis of the impact of contract enforcement on trade, demonstrating that trade volumes are more affected by contract enforcement quality in sectors that are more institutionally-intensive. The authors find a positive correlation between the quality of contract enforcement and the volume of international trade, with this impact becoming more pronounced for more differentiated goods. Moreover, Berkowitz et al. (2006) assess how the quality of national institutions, in particular those related to complex products whose distinctive features are hard to fully specify in a contract, affect international exchange. The authors show that well-designed institutions in an exporting country increase international trade. Institutions in both the importing and the exporting countries are assumed to influence transaction costs in simple and complex products. But "while international transaction costs affect the costs of trade, domestic transaction costs affect complex and simple products differently, thereby changing comparative advantage. McLaren (2000) examines how trade openness influences the organization of production in an industry equilibrium. The author argues that opening to trade has the effect of "thickening" the market, giving each firm a greater selection of procurement options from "downstream" suppliers. Also, Antràs & Helpman (2004) proceed from similar assumptions regarding firms' choices on final good production. They show that when trade costs decline, final-good producers tend to rely more on foreign outsourcing than on the creation of multinational firms.

The theoretical model by Grossman & Helpman (2002) analyses the choice between integration and outsourcing, in closed and open economy frameworks. They find that international outsourcing depends on the thickness of the market for input suppliers, institutions of contract enforcement in a country, and the costs of information regarding foreign and domestic markets. Extending Grossman and Helpman's analysis, Antras (2003) creates a two-country, two-good (final and intermediate) model. In the model, final-good producers decide whether to share investment costs of intermediate input production with their suppliers. Investment-sharing is assumed to decrease the severity of the hold-up problem but becomes more difficult in labour-intensive sectors. Under these assumptions, vertical integration becomes more likely as the intermediate input becomes more capital-intensive. The theoretical and empirical literature shows that institutions affect the level of trade in diverse ways and key in stimulating growth. Ogundipe et al. (2014) examined whether institutions matter when engaging in international trade using data span from 1980 to 2010. The methodology used in the study was the General Method of Moments (GMM) estimation. The result showed that indigenous institutions deployed protectionist measures by increasing tariffs on imported goods whereas international institutions reduce regional tariffs. In conclusion, the study showed that institutions matter in reducing transaction cost notably when engaging in international trade. Álvarez et al. (2018) assessed the importance of institutions in stimulating trade of 186 countries using data span from 1996 to 2012. The methodology used was the gravity model of international trade based on sectorial trade framework estimated with the Poisson Pseudo Maximum Likelihood test. The result showed that both the institutional conditions at the destination and the institutional distance between exporting and importing countries are relevant factors for bilateral trade. The study concludes that institutions quality influences international trade.

METHODOLOGY

Dataset

The study used a dataset with 360 bilateral trade observations spanning from 2000 to 2017 (some observations are missing for the dependent variable). Export data was sourced from United Nations Conference on Trade and Development (UNCTAD), and International Monetary Fund Direction of Trades (DOTs). GDP, FDI, and GDP per capita were sourced from World's Bank World Development Indicators (WDI), the distance was sourced from CEPII, Real Effective Exchange Rate (REER) from United Nations Conference on Trade and Development (UNCTAD) and WDI, data on Tariff was obtained from World Bank's ESCAP and Institutional quality data was obtained from World Governance Indicators, trade and transport infrastructure was sourced from World Bank Logistics Performance Index. The study used an augmented gravity model of international trade in the estimation of the trade costs effect on trade in line with examining the works of Ogundipe et al. (2014), Anukoonwattaka (2016), Abasimi (2018), Abdul-Wahab (2018), and Norley &Rosenthal (2019) among others.

Model 1

$$X_{ij} = \beta_0 + \beta_1 ln(Y_iY_j/Pop_iPop_j)_t + \beta_2 V_{ij} + \beta_3 lnCrptctrl_{ij} + \beta_4 lnPS_{ij} + \beta_5 lnGE_{ij} + \beta_6 lnRQ_{ij} + \beta_7 lnRL_{ij} + \beta_8 lnVA_{ij} + \pi lnTariff_{ij} + \varphi lnFDI_{ij} + \varepsilon_{ijt} \quad 3.1$$

Model 2

$$X_{ij} = \beta_0 + \beta_1 ln(Y_iY_j) + \beta_2 (Y_iY_j/Pop_iPop_j)_t + \beta 3 lnDij + \beta 4 l_n Cont_{ij} + \beta_5 lnLang_{ij} + \beta_6 Lang_{ij} + \beta_7 Comcol_{ij} + \varphi lnFDI_{ij} + \beta_8 V_{ij} + \beta_9 lnPS_{ij} + \beta_{10} lnqtyTinf_{ij} + \pi lnTariff_{ij} + \varepsilon_{ijt} \quad 3.2$$

Model 3

$$X_{ij} = \beta_0 + \beta_1 ln(Y_iY_j) + \beta_2 (Y_iY_j/Pop_iPop_j)_t + \beta 3 lnDij + \beta 4 l_n Cont_{ij} + \beta_5 lnLang_{ij} + \beta_6 Comcol_{ij} + \beta_7 lnFDI_{ij} + \beta_8 V_{ij} + \sigma Peakness + \beta_9 lnPS_{ij} + \beta_{10} lnRL_{ij} + \beta_{11} lnqtyTinf_{ij} + \beta_{12} nTariff_{ij} + \beta_{13} lnNontariff_{ij} + \vartheta EAC + \varepsilon ijt \quad 3.3$$

Where *i* and *j* denotes countries, *t* denotes time, and the variables are defined as: X_{ij} denotes the value of bilateral trade (exports) between *i* and *j*, *Y* is real GDP, *Pop* is population, $V_{t(ij)}$ is the volatility of the bilateral (between *i* and *j*) real effective exchange rate in the period before *t*, $Peakness_{ij}$ is a binary variable that is unitary if the exchange rate is low peaked and 0 otherwise in the period *t*, RL_{ij} denotes the product of rule of law in the country-pairs, VA_{ij} denotes the product of voice and accountability between country-pairs, $Crptctrl_{ij}$ represent corruption control effort in the country-pairs, PS_{ij} represent the product of political stability and absence of voice between country-pairs, GE_{ij} represent the product of Government effectiveness between country-pairs, RQ_{ij} represent the product of regulatory quality of country-pairs, $lnqtyTinf_{ij}$ is the product of the quality of trade and transport infrastructure on trade between country-pairs, $Tariff_{ij}$ represent the charge between country-pairs, FDI_{ij} represent foreign direct inflow between the country-pairs, D_{ij} is the distance between *i* and *j* , $Nontariff_{ij}$ represent the reported non-trade barriers between country-pairs, EAC is a binary that is unitary when Burundi and Rwanda were members and 0 otherwise during the trading period, ε_{ij} is a vector of nuisance coefficients, and represents the myriad other influences on bilateral exports, assumed to be well behaved, (Where $I = 1, 2, \ldots\ldots N$ is the number of countries where N=5, *t* is the time-series dimension of the data (t=18 years). However, South Sudan was not used in the estimation due to limited data on the various variables of interests.

Definition of Variables and Expected Signs

Export was adopted in the model to represent trade flows between countries at the levels since imports is usually underestimated. GDP was used to proxy for the economic mass of the country in the model. It was measured as the log product of the GDP of country-pairs. GDP per capita was used as a proxy for access to the market. It was measured as the log product of GDP per capita of the country-pairs in the model. Distance is the transportation cost involved in trading between the two countries. The coefficient of sharing a land border is expected to have a positive relationship with trade. Spatial theory of trade depicts that countries sharing border tends to cooperate to enhance trade. The coefficient of Language is expected to have a positive relationship with trade. Adam Smith argued in 'Wealth of Nations' that common language enhances trade and exchange utilizing effectively communicating the task in hand to the trading partners and easily convincing parties to know it is in their best interest. The coefficient of a common currency is expected to have a positive effect on trade. Exchange rate volatility was computed as the standard deviation of the moving average of the natural log of real effective exchange rate (REER). The study used real effective exchange rate data in the computation of the exchange rate volatility using the standard deviation approach due to the latest development in exchange rate volatility measures (Serenis & Tsounis, 2014). Recent development in trade stipulates countries are no more interested in the value of their currency with another country but rather how its currency is valuated with their major trading partners. Real effective exchange rate is the nominal effective exchange rate (a measure of the value of several foreign currencies) divided by a price deflator or index of costs. According to Serenis (2012), the main criticism of using standard deviation as a measure for exchange rate volatility fails to capture the potential effects of high and low peak values of the exchange rate.

The high and low peak values refer to the unpredictable factor which affects trade. The peak of exchange rate volatility was computed as the average of the volatility, deducted from the various values and represented by 1 if low peaked and 0 otherwise (PEAKNESS).

Tariff is defined as the taxes charged on goods and services imported. According to the World Bank ESCAP, Tariff answers the question, 'Evaluate the effect of tariffs on agricultural goods. The study used six indicators of institutional quality namely; rule of law, regulatory quality, control of corruption, and government effectiveness. Rule of Law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Moreover, Regulatory Quality captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Also, the control of corruption was captured as the perception of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as the capture of the state by elites and private interests. Furthermore, Government Effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Government Effectiveness and Regulatory Quality are related to the capacity of the government to effectively formulate and initiate sound policies, which is quite similar to business regulations, measured by the Doing Business indicators. Voice and Accountability as defined by WGI, Voice and Accountability captures perceptions of the extent to which a country's citizens can participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. Finally, Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism. The coefficient is expected to have a positive impact on trade. The various indicators of institutions were measured as the log product of the country-pairs.

Estimation technique and Empirical Application

Monte Carlo simulation shows that the gravity model of international trade is best estimated using a nonlinear model (Silva Santos and Tenreyro, 2011). The Poisson Pseudo Maximum likelihood is the best estimator for the gravity model due to the prevalence of zero trade-in data and its prowess of eliminating heteroscedasticity, autocorrelation, catering for model misspecification among others. Furthermore, the PPML estimates is efficient in both small and large sample size (Silva Santos and Tenreyro, 2006). To buttress. The PPML is the best estimator for estimating the coefficients of the gravity model (Bobková, 2012; Martin & Pham, 2015; Vavrek, 2018).

4.1: Results for the impact of institutions on trade

The study estimates the effect of institutions on trade

Table 1 Poisson Pseudo Maximum Likelihood (PPML) Estimates

Variables	Coefficients
GDP per capita	3.471***
	(.5204883)
Volatility	-.267
	(.6403932)
Corruption Control	-.063
	(.2793309)
Government Effectiveness	1.115
	(.6891704)
Political Stability and Absence of Violence	.659
	(.4491196)
Regulatory Quality	-.411
	(.291757)
Rule of Law	-.300
	(.3294651)
Voice and Accountability	-.765***
	(.1892399)
Tariffs	-3.502***
	(.9357429)
FDI	-.034
	(.0929558)
_cons	6.205
	(4.333609)

Note: *, ** and *** represent rejection of null hypothesis at 10%, 5% and 1%.

Author's Estimates Robust Standard Errors are in the parenthesis.

Corruption Control is found to have a negative but insignificant effect on trade with an estimated coefficient of -.063. The result is startling because efforts channeled to attenuate the adverse effect of corruption have not materialized. The evidence shows that there are greater loopholes in the community compared to the efforts channeled towards attenuating corruption. According to Transparency International's East Africa Bribery index (2017), corruption and bribery are highly prevalent despite the efforts to reform public institutions and educate citizens on the consequences of corruption which partly attributed to lack of strict and rigorous measures to punish culprits. Government Effectiveness is found to have a positive but insignificant effect on trade with an estimated coefficient of 1.115. The result is not startling because some fragments of the public services were found to hamper trade. In the East Africa Bribery index, 2017 survey on public services, the police in Tanzania, Kenya, and Uganda, the judiciary of Uganda and the police in Rwanda were rated the top five most bribery-prone institutions in EAC. Political Stability and Absence of Violence is found to have a positive but insignificant effect on trade with an estimated coefficient of .659. The result is not startling because the goal of attaining a stable and politically unified EAC has been effective (Cichecka, 2018). Regulatory Quality is found to have a negative but insignificant effect on trade with an estimated coefficient of -.411. The result is not startling because policies formulated were hindered by time-elapse hitherto some policies yet to be implemented notably the Single Customs Territory, failed monetary union in 2012, People-Centered Community among others. Rule of law is found to have a negative but insignificant effect on trade with an estimated effect of -.300. The result is not startling because there have been declines in the long-lasting autocratic nature of governance in East African Community according to Freedom House's Freedom to the World 2015 report notably in Uganda, Burundi, and Rwanda. Contrarily, Kenya enacting a new constitution and several reforms are now practicing some level of autocracy. (Freedom House, 2015).

Voice and Accountability is found to have a negative and significant n trade. The estimated coefficient of Voice and Accountability is -.765 and significant at 1%. The result is not startling because the East African Court of Justice has not designed a well-demarcated line on what seems to be a human rights abuse under article 27(2) of the East African Community Treaty (Possi, 2015). Also, there are restrictions to press freedom with the media operations highly under political swing which led to the dissemination of false information notably the 2017 general election of Kenya, which caused a conundrum between the people and the media. This effected freedom of expression. Also, Tanzania reduced press freedom through legislative means by imposing three laws notably the 2015 statistical act, the 2015 Cybercrime Act, and the 2016 Media Services Act (Freedom House, 2018). Also, Uganda imposed repressive new laws aimed at political opposition, independent media, women, civil society among others. In Burundi, the breach of the constitutional term of office by the President to run an additional term and initiated measures to frustrate the opposition. Rwanda continuously implement repressive measures in the view of ensuring national security (Freedom House, 2015).

4.2: Results for trade and transport infrastructure on trade

The study estimates the effect of trade and transport infrastructure on trade

Table 2 Poisson Pseudo Maximum Likelihood (PPML) Estimates

Variables	Coefficients
GDP	.694
	(.503237)
GDP per capita	.807
	(1.207993)
Distance	-.283
	(.9583379)
Border	.502
	(.3012646)
Language	-.137
	(.6723092)
Colonizer	-.161
	(.1861638)
FDI	.152
	(.1351261)
Volatility	-.284
	(.3815617)
Political Stability and Absence of Violence	.0129
	(.3126687)
infrastructure	.875***
	(.3385064)
Tariff	-4.269***
	(.972469)
_cons	9.209
	(8.175903)

Note: *, ** and *** represent rejection of null hypothesis at 10%, 5% and 1%.

Author's Estimates Robust Standard Errors are in the parenthesis.

Infrastructure is found to have a positive effect on trade and significant at 1% with an estimated coefficient of 0.875. The result shows that the existing infrastructure support trade. The result is not startling because of the implementation of the EAC interstate road transport policy which reduced documentation for crews and vehicles at border crossings and harmonized immigration regulations. The effort has made transportation easier and encourage cross-country trade relations in line with developments in education and labour market among members of EAC (Cichecka, 2018). The proposed hard infrastructure such as rerouting of the regional infrastructure, railways among others in EAC has not been encouraging.

4.2: Results for the impact of Burundi and Rwanda membership on trade

The study estimates the impact of Burundi and Rwanda membership of EAC on trade

Table 2 Poisson Pseudo Maximum Likelihood (PPML) Estimates

Variables	Coefficients
GDP	1.455 **
	(.5868404)
GDP per capita	-.648
	(.9711305)
Distance	.717
	(.8740689)
Border	.743**
	(.2905976)
Language	-.620
	(.8003494)
Colonizer	-.493 **
	(.2164802)
Volatility	-.284
	(.4314461)
Peakness	.099
	(.1264159)
Political Stability and Absence of Violence	.235
	(.338119)
Rule of Law	-.653
	(.5332479)
Tariff	-6.955***
	(1.101569)
FDI	.277
	(.1821148)
Nontariff	2.169**
	(1.050994)
Infrastructure	.751**
	(.3801787)
EAC	-.814*
	(.4351147)
_cons	1.192
	(9.423201)

Note: *, ** and *** represent rejection of null hypothesis at 10%, 5% and 1%.

Author's Estimates Robust Standard Errors are in the parenthesis.

The coefficient of EAC is found to be negative and significant on trade with an estimated coefficient of -.814 at 10%. The result shows that EAC membership reduced trade costs hence Burundi and Rwanda benefited from joining the East African Community rather than contributed to trade in the community by 81%. In this context, the result reinstates regional integration enhances trade by reducing barriers. This is not startling because the main contributors to the community have been Kenya, Tanzania, and Uganda due to the economic size and lasting trade ties even though challenged with impediments to trade.

Conclusion

In conclusion, the results show that institutions are not facilitating trade hitherto voice and accountability the most prevalent in reducing the volume of trade due to the inability of the citizens to express and effectively exercise their views. Also, the study showed that trade and transport infrastructure had a positive and significant effect on trade. Furthermore, the study showed that Burundi and Rwanda benefited from joining EAC rather than contributing to trade within the community.

The study recommends that protocols of EAC should devise an institutional framework to reduce transaction costs. In this background, improvement in institutions will unearth greater trade potential as well as the large informal sector. Regulatory Quality was found to have a negative but insignificant effect on trade. In this background, every country has a different regulatory framework deployed to curtail irregularities in the system.

As a result, countries experience spillovers of poor regulatory framework form other members, therefore the need for a complementary regulatory framework to stimulate relatively equal private sector involvement in trade. An institution has to be established to coordinates policies in line with undertaking cost and benefits analysis on the various regulatory options to tackle the most relevant challenges, to improve upon the existing regulatory framework design to obtain relatively accurate information. Also, the regulatory framework that does not serve the populace interest should be removed such as quotas among others. The government is to improve credit ratings by improving regulatory accounting practices, initiate policies to stimulate entrepreneurship to affect economic growth and meeting clean energy targets by fiscal incentives, public financing mechanisms and complementary regulatory framework or to meet the energy targets of the community since it is the fourth largest cost to doing business in developing countries. (World Bank doing business Report, 2018). Also, greater accessibility to the donor information with regards to the financiers of government regulatory initiatives will ensure greater transparency to stimulate growth. Finally, the community must adopt a regulatory framework in the jurisdiction of its economic, political, legal, and constitutional system to ensure transparent rules, strong enforcement mechanisms and effective checks and balances to improve the business environment for the private sector.

Corruption Control was estimated to have a negative but insignificant effect on trade. In this background, combating corruption cannot be evaluated in the context of the institution alone. Thus, it is an interconnected economic, political, and institutional factors therefore dependent on the government in power. Greater transparency, merit-based human resource management, and accountability in public administration will attenuate corruption. Also, an improved and standardized wages in line with rigorous and strict punishment for culprits can help attenuate corruption. Investment in infrastructure to accommodate the relatively high demand for public services such as employment, school placements among others. To ensure greater job security, the government is to initiate policies to stimulate greater private sector involvement through tax reliefs, provide technical supports for small-scale industries and introduce numerous courses in the tertiary institutions to address the needs of the community. The reason for the initiative is to reduce the focus on public sector-oriented careers. Also, Policing of codes and conducts of the private sector and complying with high governance standards through programmes to build the capacity of institutions. Finally, rigorous education on the rights, privileges, and responsibilities as citizens should be well spelled out and communicated through mass media to encourage involvement in political decisions. The media and civil society can help denounce corruption scandals and mounts pressure on the government to reduce the pernicious effects of corruption.

Voice and Accountability was estimated to have a negative and significant effect on trade. In this background, the study recommends the following solutions to achieve a government for the people. Firstly, press freedom is key to the realization notably serving as the mouthpiece of the populace. Greater transparency to ensure information is available and communicated to the populace. Also, providing logistics for civil servants and the media to aid citizens monitor services and the governments through regular dialogues with government officials. Interconnected governance would ensure accountability by involving the right people and forming alliances among parties actively indulged in ensuring transparency and accountability. Finally, the need for increase gender equality in government services delivery especially women.

Rule of Law was estimated to have a negative but insignificant effect on trade. In this context, there is the need to a single legal system for East Africa Community since incoherent legal systems enhance State's fragility. This can be done by initiating policies of equality, active involvement of local institutions by complementary government regulatory agencies and courts, training of officials to run state institutions, and inducing foreign donor participation through the EAC community policy framework. In the nutshell, the implementation of these policies will have an overall economic improvement on the institutional impact on trade.

APPENDICE

```
Number of parameters: 11
Number of observations: 177
Number of observations dropped: 0
Pseudo log-likelihood: -2.850e+09
R-squared: .73013922
                              (Std. Err. adjusted for 20 clusters in pairings)
```

trade	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
Percapita	3.470978	.5204883	6.67	0.000	2.45084	4.491116
volatility	-.2668123	.2450774	-1.09	0.276	-.7471552	.2135307
CC	-.0625839	.2793309	-0.22	0.823	-.6100625	.4848947
GE	1.11544	.6891704	1.62	0.106	-.235309	2.466189
PS	.6593338	.4491196	1.47	0.142	-.2209244	1.539592
RQ	-.4106578	.291757	-1.41	0.159	-.9824911	.1611755
RL	-.3004128	.3294651	-0.91	0.362	-.9461524	.3453269
VA	-.7652776	.1892399	-4.04	0.000	-1.136181	-.3943743
Tariff	-3.50208	.9357429	-3.74	0.000	-5.336102	-1.668057
fdi	-.0337586	.0929558	-0.36	0.716	-.2159486	.1484313
_cons	6.204786	4.333609	1.43	0.152	-2.288932	14.6985

Number of parameters: 12
Number of observations: 58
Number of observations dropped: 0
Pseudo log-likelihood: -7.529e+08
R-squared: .84816567

(Std. Err. adjusted for 20 clusters in pairings)

trade	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
GDP	.6944798	.503237	1.38	0.168	-.2918466	1.680806
Percapita	.8066686	1.207993	0.67	0.504	-1.560953	3.174291
distance	-.2834936	.9583379	-0.30	0.767	-2.161801	1.594814
border	.5023445	.3012646	1.67	0.095	-.0881233	1.092812
language	-.1373719	.6723092	-0.20	0.838	-1.455074	1.18033
colonizer	-.1611592	.1861638	-0.87	0.387	-.5260335	.2037152
fdi	.1520723	.1351261	1.13	0.260	-.1127699	.4169146
volatility	-.2838758	.3815617	-0.74	0.457	-1.031723	.4639713
PS	.0129233	.3126687	0.04	0.967	-.5998961	.6257427
infrastructure	.8752637	.3385064	2.59	0.010	.2118033	1.538724
Tariff	-4.2693	.972469	-4.39	0.000	-6.175304	-2.363296
_cons	9.209068	8.175903	1.13	0.260	-6.815407	25.23354

Number of parameters: 16
Number of observations: 53
Number of observations dropped: 0
Pseudo log-likelihood: -6.034e+08
R-squared: .85716583

(Std. Err. adjusted for 19 clusters in pairings)

trade	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
GDP	1.454926	.5868404	2.48	0.013	.3047401	2.605112
Percapita	-.6480475	.9711305	-0.67	0.505	-2.551428	1.255333
distance	.7166505	.8740689	0.82	0.412	-.996493	2.429794
border	.7432598	.2905976	2.56	0.011	.1736989	1.312821
language	-.6200564	.8003494	-0.77	0.438	-2.188712	.9485996
colonizer	-.4930835	.2164802	-2.28	0.023	-.9173768	-.0687902
volatility	-.2835355	.4314461	-0.66	0.511	-1.129154	.5620833
peakness	.0990079	.1264159	0.78	0.434	-.1487628	.3467785
PS	.2350036	.338119	0.70	0.487	-.4276974	.8977047
RL	-.6528572	.5332479	-1.22	0.221	-1.698004	.3922895
Tariff	-6.955321	1.101569	-6.31	0.000	-9.114357	-4.796284
fdi	.2765531	.1821148	1.52	0.129	-.0803854	.6334915
nontariff	2.169045	1.050994	2.06	0.039	.1091356	4.228955
infrastructure	.7509549	.3801787	1.98	0.048	.0058183	1.496092
EAC	-.8137308	.4351147	-1.87	0.061	-1.66654	.0390783
_cons	1.191737	9.423201	0.13	0.899	-17.2774	19.66087